Correlates of Mental Illness and Wellbeing in Children: Are They the Same? Results From the UK Millennium Cohort Study

Praveetha Patalay, PhD, AND Emla Fitzsimons, PhD

Objective: To investigate a framework of correlates of both mental illness and wellbeing in a large, current, and nationally representative sample of children in the United Kingdom.

Method: An ecologic framework of correlates including individual (sociodemographic and human capital), family, social, and wider environmental factors were examined in 12,347 children aged 11 years old from the UK Millennium Cohort Study. Mental illness and wellbeing scores were standardized to allow comparisons, and the variance explained by the different predictors was estimated.

Results: Mental illness and wellbeing were weakly correlated in children ($r = 0.2$), and their correlates were similar in some instances (e.g., family structure, sibling bullying, peer problems) but differed in others (e.g., family income, perceived socioeconomic status, cognitive ability, health status, neighborhood safety). The predictors included in the study explained 47% of the variance in symptoms of mental illness, with social relationships, home environment, parent health, cognitive ability, socioeconomic status, and health factors predicting large amounts of variance. A comparatively lower 26% of the variance in wellbeing was explained by the study variables, with wider environment, social relationships, perceived socioeconomic status, and home environment predicting the most variance.

Conclusion: Correlates of children's mental illness and wellbeing are largely distinct, stressing the importance of considering these concepts separately and avoiding their conflation. This study highlights the relevance of these findings for understanding social gradients in mental health through the life course and the conceptualization and development of mental illness and wellbeing in childhood as precursors to lifelong development in these domains.

Key words: psychopathology, mental health, determinants, psychiatric epidemiology, social gradient

J Am Acad Child Adolesc Psychiatry 2016;55(9):771–783.

According to the World Health Organization, health has long been defined as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity."[1(p1)] Despite the definition's emphasis on wellbeing, until recently the focus of research has primarily been on mental illness.[2] Moreover, those studies that state their focus as wellbeing often focus on symptoms of mental illness,[3-5] underlining the conflation of these two concepts.

Mental illness is one of the major causes of life years lost[6] and has a negative impact on a range of domains through the life course, including economic activity, relationships, and physical health.[7] Longitudinal research has shown that the precursors and first onset of mental disorder are often observed in childhood[8,9]; hence, understanding the predictors of childhood symptomatology can provide insight into which individuals might be at greater risk of experiencing psychopathology through the life course. Wellbeing is construed variously as a combination of positive emotions, engagement, meaningful relationships, and a sense of accomplishment[10,11] or as flourishing in aspects of feeling and functioning,[12] thus reflecting the positive aspects of mental health. Although less is known about the continuities and discontinuities of wellbeing through childhood and into adulthood, the arguments for focusing on children's wellbeing are supported by research demonstrating the strong relevance of childhood in shaping lifelong outcomes, the observation of health inequalities in childhood,[13,14] and the effects of childhood emotional health on adult wellbeing.[15,16]

Theoretically, there is much debate around whether these two constructs represent two ends of the same spectrum of mental health or two distinct domains that overlap and interact.[2,12,17] Little research has examined the possible conceptual and aetiological differences in these constructs by examining the similarities and differences in the predictors of mental illness and wellbeing in children. Rather, studies in children have focused mainly on mental illness (e.g., British Child and Adolescent Mental Health Survey[18] and the Great Smoky Mountain Study[19]) and only more recently on wellbeing (e.g., Children's Worlds study[20]). Although these studies provide relevant information regarding one or the other outcome, the predictors included are different and, where overlap does exist, often differently measured. Hence, the present study investigated and compared a wide range of predictors of children's mental ill-health and subjective wellbeing in the same sample of

CG Clinical guidance is available at the end of this article.

children from a nationally representative birth cohort study in the United Kingdom.

Children develop as individuals in society within multiple and interacting domains and influences, including their family, peers, and wider community. Recognizing the multiple influences on children's mental health and situating the research in ecologic systems theories[21] and the proximal aspects of the social determinants of health,[22] a range of determinants were examined within a framework that included information about the individual, their family, and the wider environment.

METHOD

Participants

Participants were from the Millennium Cohort Study (MCS), a UK birth cohort study of individuals born at the start of this millennium (September 2000 to January 2002). More details of the study design, variables, and attrition can be found at www.cls.ioe.ac.uk.[23] In the present study, 12,347 children who had the study outcomes of interest (mental illness and subjective wellbeing) available at age 11 years (wave 5 of the study) were included. The analyzed sample was 50.2% girls, had a mean age of 11.17 years (standard deviation 0.33), and 84.5% identified as White, 8.4% as Asian, 3% as Black, 2.9% as mixed ethnicity, and 1.2% as other ethnicities. Ethics permissions for each wave of data collection were received as described in the study documentation.[23]

Measurement: Mental Illness

Symptoms of mental illness representing the 2 broad domains of prevalent symptomatology in childhood—internalizing and externalizing problems—were measured using the Emotional Symptoms and Conduct Problems subscales of the Strengths and Difficulties Questionnaire,[24] a widely used questionnaire of psychopathology symptoms in the United Kingdom since the late 1990s. A parent or caregiver (95% mothers, 4% fathers, 1% other) responded by indicating how true (not true, somewhat true, certainly true) statements about the child were. Items are aggregated to create a mental ill-health score (mean 3.21, standard deviation 2.95), with higher scores indicating greater symptoms.

Measurement: Mental Wellbeing

Mental wellbeing was assessed using a measure developed for the youth survey of the British Household Panel Study in the 1990s.[25] This questionnaire consists of indicators of 6 different aspects of wellbeing in domains that are appropriate to children, including school, family, friends, school work, appearance, and life as a whole. Children respond by indicating their level of happiness with each aspect of their lives on a 7-point scale ranging from not at all happy to extremely happy. The score is aggregated to represent overall wellbeing (mean 35.66, standard deviation 6.39), with higher scores indicating greater wellbeing.

Measurement: Correlates

Based on an ecosystems framework and incorporating social determinants at the individual level, 10 blocks of predictors grouped into 4 key areas were investigated, which began at the individual child level and then included the family, social relationships, school, and wider environment: (1) child sociodemographic factors, including their demographic characteristics, socioeconomic status, and perceived wealth and inequality; (2) human capital factors, including cognitive abilities and health status; (3) family factors, including family structure, home environment, and parent health; and (4) social and environmental factors, including social relationships and the wider school and neighborhood environments. The variables included in each key area and how they were operationalized are detailed below. Descriptive statistics (proportions for categorical variables and means for continuous scale scores) are presented in Table 1.

Child Sociodemographic Factors

Child Demographics. Child demographic characteristics included were sex (coded 0 = male, 1 = female), age (in years) at assessment (estimated from month and year of birth and month and year of the wave 5 assessment), and ethnicity grouped into 5 broad groupings (White, Asian, Black, mixed, and other ethnic groups).

Socioeconomic Factors. Household income was represented in UK equivalized quintiles (1 = lowest income quintile, 5 = highest income quintile). Employment status of parents was represented as neither parent works (compared to either or both parents working). Parent education was represented by the highest National Vocational Qualifications level in the household (levels 1–5, where level 1 represents attaining General Certificate of Secondary Education grade D to G and level 5 represents having a higher degree or diploma[26]), with separate categories for other/overseas qualifications and no qualifications. Housing status was categorized as living in own home versus rented or other property (hence, 1 = does not own home).

Child Perceptions of Socioeconomic Status. Children's satisfaction with their family's wealth was measured using an adaptation of Schor's Consumer Involvement Scale,[27] which assesses how satisfied children are with their family's material possessions and wealth (e.g., wishing the family could afford to buy more of what the child wants), with higher scores indicating greater dissatisfaction. Children's perception of relative wealth and inequality was assessed with their responses to the question, "Compared with your friends, is your family richer, poorer, or the same?"

Human Capital Factors

Cognitive Factors. Children's cognitive ability was assessed using an aggregate latent score derived from the British Ability Scales,[28] using the naming vocabulary, picture similarity, pattern construction, and verbal similarities scores at 3, 5, 7, and 11 years old, respectively. Learning and communication difficulties were assessed by whether the child had a special educational needs status (1 = child has special educational needs status) and parent reports of communication difficulties (1 = child has communication difficulties).

Health. Physical health markers included in analysis were early childhood developmental motor delay, which was estimated from parent-reported motor development at 9 months of age; indication from a parent on whether the child had any serious or chronic illness (e.g., asthma, diabetes); and a variable indicating the child's body mass index was above the overweight threshold for the child's age and sex based on the classification of the International Obesity Task Force.[29]

Family Factors

Family Structure. Family characteristics included in the analyses were whether the child was in a single-parent household, number of siblings (0, 1, 2, or ≥3), and birth parity (eldest child). All these data are available from the household grid in the MCS.

Home Environment. Three aspects of the home environment were included in the analysis. Safety of the home environment as represented by whether any parent or caregiver currently smoked in the home and the home environment as rated by an interviewer during

TABLE 1 Descriptives of Predictors and Results From the Final Regression Models Predicting Mental Illness and Wellbeing

Block	Predictor	Descriptives % or Mean (95% CI)	Mental Illness Coefficient (95% CI)	Wellbeing Coefficient (95% CI)
Sociodemographic factors				
Child demographics	sex (female)	49.1 (48.0, 50.2)	**0.05 (0.01, 0.08)**	**−0.15 (−0.19, −0.11)**
	ethnicity (White)[c]	85.9 (83.5, 88.4)		
	ethnicity (Asian)	6.1 (4.4, 7.9)	**−0.12 (−0.20, −0.04)**	0.08 (−0.01, 0.17)
	ethnicity (Black)	3.3 (2.1, 4.4)	**−0.18 (−0.29, −0.08)**	0.05 (−0.12, 0.22)
	ethnicity (mixed)	3.5 (2.9, 4.0)	0.00 (−0.12, 0.11)	0.09 (−0.01, 0.20)
	ethnicity (other)	1.2 (0.8, 1.6)	**−0.21 (−0.36, −0.06)**	0.10 (−0.12, 0.32)
	age[a]	11.2 (11.2, 11.2)	**−0.06 (−0.11, −0.01)**	0.06 (0.00, 0.12)
Socioeconomic characteristics	parent employment status (unemployed)	17.3 (16.0, 18.6)	−0.03 (−0.09, 0.03)	0.06 (−0.02, 0.13)
	income (lowest quintile)[c]	20.5 (18.5, 22.5)		
	income (second quintile)	21.8 (20.7, 22.9)	−0.05 (−0.13, 0.02)	−0.03 (−0.1, 0.05)
	income (third quintile)	19.8 (18.7, 21.0)	**−0.12 (−0.19, −0.04)**	**−0.10 (−0.18, −0.02)**
	income (fourth quintile)	19.0 (17.8, 20.2)	**−0.15 (−0.24, −0.07)**	**−0.09 (−0.18, 0.00)**
	income (highest quintile)	18.8 (17.0, 20.7)	**−0.19 (−0.28, −0.09)**	**−0.14 (−0.24, −0.05)**
	parent education (NVQ 1)[c]	8.1 (7.4, 8.9)		
	parent education (NVQ 2)	30.4 (28.9, 31.9)	−0.02 (−0.09, 0.04)	0.05 (−0.04, 0.14)
	parent education (NVQ 3)	8.0 (7.4, 8.6)	−0.05 (−0.13, 0.03)	0.04 (−0.07, 0.15)
	parent education (NVQ 4)	29.2 (27.7, 30.7)	−0.06 (−0.13, 0.02)	0.04 (−0.05, 0.14)
	parent education (NVQ 5)	11.4 (10.4, 12.4)	−0.06 (−0.14, 0.02)	0.05 (−0.06, 0.15)
	parent education (overseas/ other)	2.5 (2.0, 2.9)	0.00 (−0.12, 0.11)	0.12 (−0.04, 0.28)
	parent education (none)	10.4 (9.4, 11.4)	0.01 (−0.10, 0.11)	0.06 (−0.06, 0.17)
	home ownership (not owned)	41.1 (39.1, 43.1)	−0.04 (−0.09, 0.02)	−0.05 (−0.11, 0.00)
Perceived SES	material position of family[b]	6.7 (6.6, 6.7)	0.02 (0.00, 0.03)	**−0.03 (−0.05, −0.01)**
	relative wealth (same)[c]	85.0 (84.2, 85.9)		
	relative wealth (poorer)	9.5 (8.8, 10.2)	0.01 (−0.05, 0.07)	−0.05 (−0.12, 0.03)
	relative wealth (richer)	5.5 (5.0, 6.1)	−0.05 (−0.14, 0.03)	**−0.22 (−0.31, −0.13)**
Human capital factors				
Cognitive factors	cognitive ability[b]	0.5 (0.4, 0.7)	**−0.07 (−0.09, −0.05)**	0.02 (0.00, 0.04)
	special educational needs (yes)	4.7 (4.2, 5.2)	**0.13 (0.02, 0.24)**	0.07 (−0.04, 0.17)
	communication difficulties (yes)	7.2 (6.5, 7.9)	**0.19 (0.10, 0.27)**	−0.02 (−0.11, 0.07)
Health factors	chronic illness (yes)	14.1 (13.2, 15.0)	**0.25 (0.19, 0.30)**	0.00 (−0.06, 0.06)
	motor delay (yes)	10.8 (10.1, 11.6)	−0.04 (−0.09, 0.02)	0.03 (−0.03, 0.10)
	overweight (yes)	27.6 (26.6, 28.6)	−0.03 (−0.07, 0.01)	**−0.07 (−0.12, −0.03)**
Family factors				
Family structure	single-parent family (yes)	26.3 (25.0, 27.6)	**0.10 (0.05, 0.15)**	**−0.08 (−0.14, −0.03)**
	number of siblings (0)[c]	12.8 (12.0, 13.6)		
	number of siblings (1)	43.2 (41.7, 44.6)	**0.12 (0.07, 0.17)**	−0.02 (−0.08, 0.04)
	number of siblings (2)	27.4 (26.3, 28.4)	**0.15 (0.09, 0.22)**	−0.03 (−0.1, 0.05)
	number of siblings (≥3)	16.6 (15.4, 17.9)	**0.12 (0.04, 0.19)**	−0.04 (−0.13, 0.04)
	eldest sibling (yes)	42.5 (41.2, 43.7)	0.01 (−0.03, 0.04)	0.01 (−0.04, 0.05)
Home environment	argue with parent (yes)	37.7 (36.5, 38.8)	**0.56 (0.52, 0.60)**	**−0.05 (−0.10, 0.00)**
	talk with parent (yes)	91.4 (90.6, 92.1)	−0.05 (−0.11, 0.01)	0.06 (−0.02, 0.14)
	bullied by siblings (yes)	40.0 (38.9, 41.1)	**0.06 (0.03, 0.10)**	**−0.06 (−0.11, −0.02)**
	smoker in household (yes)	34.6 (33.1, 36.1)	0.04 (0.00, 0.08)	0.00 (−0.05, 0.05)
	safe home environment[b]	5.53 (5.5, 5.56)	0.00 (−0.02, 0.03)	0.00 (−0.02, 0.02)
Parent health	parent mental health[b]	4.39 (4.25, 4.52)	**0.16 (0.14, 0.19)**	0.00 (−0.02, 0.03)
	parent general health[b]	2.34 (2.31, 2.37)	**0.03 (0.01, 0.05)**	−0.01 (−0.03, 0.01)
	parent longstanding illness	33.9 (32.6, 35.3)	0.01 (−0.03, 0.05)	−0.01 (−0.05, 0.04)
	parent life satisfaction[b]	7.1 (7.0, 7.1)	−0.01 (−0.03, 0.01)	**0.03 (0.00, 0.05)**

TABLE 1 Continued

Block	Predictor	Descriptives % or Mean (95% CI)	Mental Illness Coefficient (95% CI)	Wellbeing Coefficient (95% CI)
Social and environmental factors				
Social relationships	peer problems[b]	1.4 (1.4, 1.5)	**0.36 (0.34, 0.39)**	**−0.08 (−0.1, −0.06)**
	argue with friends (yes)	15.6 (14.7, 16.5)	0.01 (−0.04, 0.07)	**−0.11 (−0.17, −0.05)**
	bullied by peers (yes)	16.5 (15.6, 17.4)	0.02 (−0.03, 0.08)	**−0.25 (−0.3, −0.19)**
	spends time with friends (yes)	72.7 (71.5, 73.9)	0.02 (−0.02, 0.07)	**0.10 (0.06, 0.15)**
Wider environment	school connectedness[b]	3.2 (3.2, 3.2)	**−0.07 (−0.09, −0.04)**	**0.29 (0.26, 0.32)**
	like school (yes)	46.1 (44.7, 47.4)	−0.03 (−0.07, 0.01)	**0.28 (0.23, 0.32)**
	safe neighborhood (no)	10.9 (10.0, 11.8)	0.04 (−0.02, 0.1)	**−0.15 (−0.23, −0.08)**
	urban–rural (rural)	19.7 (17.1, 22.4)	0.01 (−0.04, 0.06)	0.03 (−0.03, 0.09)
	country (England)[c]	82.0 (80.4, 83.6)		
	country (Scotland)	5.0 (4.2, 5.9)	0.01 (−0.04, 0.06)	0.03 (−0.02, 0.08)
	country (Wales)	8.9 (7.8, 9.9)	−0.02 (−0.07, 0.03)	0.03 (−0.05, 0.10)
	country (Northern Ireland)	4.1 (3.6, 4.6)	0.03 (−0.03, 0.09)	**0.10 (0.04, 0.15)**

Note: Coefficients in boldface are significant at (at least) the p < .05 level. NVQ = National Vocational Qualifications; SES = socioeconomic status.

[a]*Age is centered in the analysis.*

[b]*Descriptive statistic is the mean and standardized scores are used in the analysis.*

[c]*Reference group in the analysis.*

a wave 3 assessment visit.[30] Parent–child relationships were indicated by parent reports using the Pianta Child–Parent Relationships Scale at age 3 years (wave 2),[31] in which a higher score indicates more positive relationships; parent report of whether the parent and child have frequent battles at 11 years (1 = at least once a week), and whether and how often they talk with their child about important matters (1 = few times a week). Sibling relationships were represented by child reports of whether the children were frequently bullied by their siblings (1 = bullied by siblings at least once a week).

Parent Health. Parental health and wellbeing variables were aggregated to the household level. Parent general health was measured using the General Health item from the SF-8 ("How would you describe your health generally?") and whether a parent had a longstanding chronic illness (1 = either parent or both parents with longstanding illness). Parent mental health was assessed using the Kessler K6 scale,[32] and parents' life satisfaction was measured using a single-item measurement of life satisfaction ("On a scale from 0 to 10, how satisfied are you about the way your life has turned out so far?"), where higher scores indicate greater life satisfaction.

Social and Environmental Factors

Social Relationships. Child and parent perspectives of the child's social relationships were included. Parents reported on problems in the child's relationship with peers with the Peer Problems subscale of the Strengths and Difficulties Questionnaire.[24] Children's reports on their relationships with friends were assessed by asking them how often they argued or fell out with their friends (1 = at least once a week/no friends). Children also reported on if and how often they were bullied by their peers (1 = bullied at least once a week).

Wider Environment. Children's perspectives on their feelings of connectedness with and interest in their school and whether they liked school were included to capture their assessment of their school environment. Perceived neighborhood safety was assessed in response to the question, "How safe is it to walk, play or hang out in this area during the day?" (very safe to not at all safe; 1 = not very safe/not at all safe). The Office of National Statistics Rural Urban classification (England and Wales), Scottish Executive Urban Rural classification (Scotland), and Urban Rural status (Northern Ireland) were used to classify whether the child lived in an urban or rural area. Country of domicile within the United Kingdom (England, Scotland, Wales, or Northern Ireland) was included in the analysis.

Analysis

In the selected analysis sample of 12,347, no values were missing for the outcome variables and demographic characteristics (sex, ethnicity, and age). Multiple imputations were carried out to impute values on missing predictors. Overall, missing cells were at 3.66% of the total, with missing-ness varying from 0.02% for parent employment to 23.55% for parent–child relationships. Given the stratified clustered sample design of the MCS and to account for subgroup oversampling and attrition over waves, all analyses were conducted by accounting for the survey design and applying weights[33] (using svy commands in STATA[34]).

Descriptive analyses were conducted by examining the variance of and correlation between the predictors. Then, regression analyses were conducted predicting standardized scores (z-scores) for the study outcomes (mental illness and wellbeing), thus permitting the comparison of coefficient sizes across the 2 models. Linear regression analyses were conducted stepwise by introducing different predictors in blocks (Models A–J) as outlined in the Measurements section, allowing for an estimation of amount of additional variance in the outcomes explained by each block (Tables 2 and 3). In addition, Figure 1 displays the unadjusted variance explained by each block of predictors (R^2 for a model including just that block) and the adjusted variance explained (R^2 of the block controlling for all other blocks of variables in the study).

RESULTS

Table 1 presents descriptive statistics for all study variables and the regression coefficients from the final models

TABLE 2 Coefficients From Stepwise Regression Models Predicting Symptoms of Mental Illness

Block	Predictor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
Child demographics	sex (female)	−0.08**	−0.08**	−0.06**	−0.00	0.00	0.00	0.01	−0.00	0.02	0.05**
	ethnicity (Asian)[a]	−0.01	−0.18**	−0.18**	−0.20**	−0.18**	−0.18**	−0.03	−0.11**	−0.15**	−0.12**
	ethnicity (Black)[a]	−0.17*	−0.35**	−0.37**	−0.35**	−0.33**	−0.34**	−0.18**	−0.19**	−0.20**	−0.18**
	ethnicity (mixed)[a]	0.10	0.00	−0.01	−0.02	−0.03	−0.03	0.01	−0.01	−0.00	−0.00
	ethnicity (other)[a]	−0.14	−0.22**	−0.23**	−0.21**	−0.17*	−0.17*	−0.08	−0.16*	−0.23**	−0.21**
	age (y)	−0.11**	−0.12**	−0.13**	−0.08*	−0.08*	−0.08*	−0.06*	−0.07*	−0.07*	−0.06*
SES	parent employment status (unemployed)		0.26**	0.25**	0.21**	0.19**	0.18**	0.14**	0.00	−0.03	−0.03
	income (second quintile)[b]		−0.06	−0.06	−0.04	−0.05	−0.05	−0.05	−0.04	−0.05	−0.05
	income (third quintile)[b]		−0.22**	−0.22**	−0.17**	−0.19**	−0.19**	−0.16**	−0.15**	−0.12**	−0.12**
	income (fourth quintile)[b]		−0.34**	−0.34**	−0.27**	−0.27**	−0.27**	−0.22**	−0.17**	−0.15**	−0.15**
	income (highest quintile)[b]		−0.40**	−0.39**	−0.30**	−0.32**	−0.32**	−0.27**	−0.22**	−0.18**	−0.19**
	parent education (NVQ 2)[c]		−0.07	−0.05	−0.03	−0.03	−0.03	−0.05	−0.05	−0.03	−0.02
	parent education (NVQ 3)[c]		−0.10	−0.08	−0.03	−0.03	−0.03	−0.07	−0.08	−0.05	−0.05
	parent education (NVQ 4)[c]		−0.14*	−0.11*	−0.05	−0.06	−0.05	−0.08*	−0.08	−0.06	−0.06
	parent education (NVQ 5)[c]		−0.17**	−0.14*	−0.06	−0.06	−0.06	−0.08	−0.08	−0.07	−0.06
	parent education (overseas/other)[c]		−0.00	0.01	0.02	0.04	0.05	0.06	0.03	0.00	−0.00
	parent education (none)[c]		0.10	0.11	0.09	0.09	0.10	0.09	0.02	0.00	0.01
	home ownership status (not owned)		0.09*	0.08*	0.06	0.04	0.03	0.01	0.00	−0.03	−0.04
Perceived SES	material position of family			0.10**	0.08**	0.08**	0.08**	0.03*	0.02*	0.03**	0.02
	relative wealth (poorer)[d]			0.08*	0.03	0.02	0.02	0.01	0.04	0.02	0.01
	relative wealth (richer)[d]			0.17**	0.18**	0.16**	0.17**	0.09	0.01	−0.04	−0.05
Cognitive factors	cognitive ability				−0.13**	−0.12**	−0.12**	−0.10**	−0.10**	−0.08**	−0.07**
	special educational needs (yes)				0.54**	0.41**	0.41**	0.34**	0.37**	0.14*	0.13*
	communication difficulties (yes)				0.61**	0.53**	0.53**	0.46**	0.39**	0.18**	0.19**
Health	chronic illness (yes)					0.45**	0.45**	0.40**	0.36**	0.25**	0.25**
	motor delay (yes)					−0.04	−0.04	−0.04	−0.04	−0.04	−0.04
	overweight (yes)					0.08**	0.09**	0.04	0.02	−0.03	−0.03
Family structure	single-parent family (yes)						0.05	0.12**	0.08**	0.10**	0.10**
	number of siblings (1)[e]						0.04	0.00	0.03	0.11**	0.12**
	number of siblings (2)[e]						0.07	0.02	0.07	0.15**	0.15**
	number of siblings (≥3)[e]						0.04	−0.02	0.03	0.11**	0.12**
	eldest sibling (yes)						0.08**	0.01	0.03	0.00	0.01
Home environment	argue with parent (yes)							0.74**	0.66**	0.57**	0.56**
	talk with parent (yes)							−0.07	−0.06	−0.06	−0.05
	bullied by siblings (yes)							0.14**	0.13**	0.08**	0.06**
	smoker in household (yes)							0.09**	0.05*	0.04*	0.04
	safe home environment							−0.02	−0.02	0.00	0.00
Parent health	parent mental health								0.21**	0.16**	0.16**
	parent general health								0.04**	0.03**	0.03**
	parent longstanding illness								0.03	0.01	0.01
	parent life satisfaction								−0.02	−0.02	−0.01

TABLE 2 Continued

Block	Predictor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
Social relationships	peer problems									0.37**	0.36**
	argue with friends (yes)									0.03	0.01
	bullied by peers (yes)									0.05	0.02
	spends time with friends (yes)									0.02	0.02
Wider environment	school connectedness										−0.07**
	like school (yes)										−0.03
	safe neighborhood (no)										0.04
	urban–rural (rural)										0.01
	country (Scotland)										0.01
	country (Wales)										−0.02
	country (Northern Ireland)										0.03
R^2		0.004	0.087	0.100	0.166	0.188	0.190	0.313	0.360	0.467	0.471
R^2 change		–	0.083	0.013	0.066	0.022	0.002	0.123	0.047	0.107	0.004

Note: NVQ = National Vocational Qualifications; SES = socioeconomic status.
[a]Ethnicity (White).
[b]Income (lowest quintile).
[c]Parent education (NVQ1).
[d]Relative wealth (same).
[e]Number of siblings (0).
**p < .01; *p < .05.

predicting standardized scores of mental illness and subjective wellbeing. Tables 2 and 3 present stepwise results from Models A through J for mental illness and wellbeing, respectively. Variance explained by each model (R^2) and additive variance explained after including each new block of predictors (R^2 change) also are presented (Tables 2 and 3).

Considering the correlations between predictor variables, given variables were chosen to represent distinct aspects of the child's ecosystem; most correlations were below ±0.2. The exceptions were family socioeconomic factors (where correlations ranged from 0.28 to 0.59), smoking in the household (which correlated >0.20 with socioeconomic factors), parent life satisfaction (which correlated −0.33 with single-parent status and −0.5 with their depression score), and special education needs (SEN) and communication difficulties (which correlated 0.31). The low correlations between the predictor variables limit concerns regarding collinearity between the predictors in the models. The two outcomes, mental illness and wellbeing, were correlated −0.2, indicating low overlap between these two domains.

Mental Illness

The variables included in the model predicted 47% of the variance in symptoms of mental illness, and most of the explained variance in mental illness symptoms was observed from cognitive factors, home environment, parent health, and social relationships (Figure 1, Table 2). Before adjustment, 7 of the 10 blocks each explained more than 5% of the variance. Demographic profile accounted for less than 1% of the variance in mental ill-health, and greater than 10% of the additional variance was explained by home environment and social relationships when they were included as predictors into the model. Individual variables with the highest associations with greater symptoms included communication difficulties, special educational needs, chronic illness, arguing with a parent, and difficulties in peer relationships, whereas higher family income was associated with lower levels of symptoms.

Mental Wellbeing

Overall, 26% of the variance in wellbeing was explained by the model including all predictors (Figure 1, Table 3). For wellbeing, social relationships and the wider environment were the only two blocks to explain more than 5% of the variance, with wider environmental factors explaining more than 12% of the variance in wellbeing scores. School connectedness, liking school, and perception of neighborhood safety were significantly associated with subjective wellbeing. Wellbeing among children in Northern Ireland was on average a tenth of a standard deviation higher compared with children in England. Individual variables with the highest associations with lower wellbeing included perceived inequality (especially identifying oneself as richer than peers), arguing with parents, and experiencing sibling and peer bullying. Spending time outside school with friends, school connectedness, and safe neighborhood were associated with greater wellbeing.

TABLE 3 Coefficients From Stepwise Regression Models Predicting Wellbeing

Block	Predictor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
Child demographics	sex (female)	0.02	0.03	−0.01	−0.02	−0.02	−0.02	−0.02	−0.02	−0.02	−0.15**
	ethnicity (Asian)[a]	0.25**	0.22**	0.22**	0.24**	0.24**	0.23**	0.17**	0.18**	0.20**	0.08
	ethnicity (Black)[a]	0.06	0.10	0.14	0.14	0.15	0.17	0.09	0.09	0.09	0.05
	ethnicity (mixed)[a]	0.04	0.08	0.10	0.10	0.11	0.12*	0.09	0.09	0.07	0.09
	ethnicity (other)[a]	0.21	0.21	0.22	0.22	0.21	0.20	0.16	0.17	0.20	0.10
	age (y)	0.12**	0.12**	0.13**	0.11**	0.11**	0.11**	0.10**	0.10**	0.07*	0.06
SES	parent employment status (unemployed)		−0.09*	−0.07	−0.06	−0.05	−0.01	−0.00	0.03	0.04	0.06
	income (second quintile)[b]		−0.03	−0.03	−0.04	−0.03	−0.02	−0.03	−0.03	−0.03	−0.03
	income (third quintile)[b]		−0.07	−0.07	−0.09*	−0.08*	−0.08	−0.10*	−0.10*	−0.11*	−0.10*
	income (fourth quintile)[b]		−0.03	−0.04	−0.07	−0.06	−0.06	−0.09	−0.10*	−0.11*	−0.09*
	income (highest quintile)[b]		−0.09	−0.10*	−0.13**	−0.12*	−0.14*	−0.17**	−0.17**	−0.19**	−0.14**
	parent education (NVQ 2)[c]		0.12*	0.09	0.08	0.08	0.08	0.08	0.08	0.06	0.05
	parent education (NVQ 3)[c]		0.11	0.08	0.06	0.06	0.06	0.07	0.07	0.05	0.04
	parent education (NVQ 4)[c]		0.16**	0.12*	0.10*	0.09	0.09	0.10	0.09	0.08	0.04
	parent education (NVQ 5)[c]		0.21**	0.16**	0.13*	0.12*	0.11*	0.12*	0.11*	0.10	0.05
	parent education (overseas/other)[c]		0.14	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.12
	parent education (none)[c]		0.09	0.08	0.08	0.08	0.10	0.10	0.10	0.09	0.06
	home ownership status (not owned)		−0.17**	−0.15**	−0.15**	−0.14**	−0.12**	−0.11**	−0.11**	−0.08*	−0.05
Perceived SES	material position of family			−0.15**	−0.14**	−0.14**	−0.14**	−0.11**	−0.11**	−0.11**	−0.03**
	relative wealth (poorer)[d]			−0.14**	−0.12**	−0.11**	−0.11**	−0.11**	−0.12**	−0.09*	−0.05
	relative wealth (richer)[d]			−0.43**	−0.43**	−0.43**	−0.42**	−0.38**	−0.36**	−0.29**	−0.22**
Cognitive factors	cognitive ability				0.06**	0.06**	0.06**	0.05**	0.05**	0.04**	0.02
	special educational needs (yes)				−0.06	−0.03	−0.03	−0.01	−0.02	0.07	0.07
	communication difficulties (yes)				−0.16**	−0.14**	−0.14**	−0.12*	−0.10	−0.01	−0.02
Health	chronic illness (yes)					−0.12**	−0.12**	−0.11**	−0.09**	−0.04	0.00
	motor delay (yes)					0.04	0.04	0.05	0.05	0.06	0.03
	overweight (yes)					−0.11**	−0.11**	−0.10**	−0.09**	−0.06*	−0.07**
Family structure	single-parent family (yes)						−0.11**	−0.12**	−0.08**	−0.09**	−0.08**
	number of siblings (1)[e]						−0.03	0.05	0.04	−0.00	−0.02
	number of siblings (2)[e]						−0.05	0.04	0.03	−0.02	−0.03
	number of siblings (≥3)[e]						−0.05	0.04	0.03	−0.03	−0.04
	eldest sibling (yes)						0.03	0.04	0.03	0.05	0.01
Home environment	argue with parent (yes)							−0.15**	−0.13**	−0.09**	−0.05*
	talk with parent (yes)							0.08	0.08	0.09*	0.06
	bullied by siblings (yes)							−0.24**	−0.23**	−0.15**	−0.06**
	smoker in household (yes)							−0.05	−0.04	−0.03	−0.00
	safe home environment							0.01	0.01	−0.00	−0.00
Parent health	parent mental health								−0.02	0.00	0.00
	parent general health								−0.02	−0.01	−0.01
	parent longstanding illness								−0.01	0.00	−0.01
	parent life satisfaction								0.05**	0.05**	0.03*
Social relationships	peer problems									−0.11**	−0.08**
	argue with friends (yes)									−0.19**	−0.11**

TABLE 3 Continued

Block	Predictor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
	bullied by peers (yes)									−0.36**	−0.25**
	spends time with friends (yes)									0.12**	0.10**
Wider environment	school connectedness										0.29**
	like school (yes)										0.28**
	safe neighborhood (no)										−0.15**
	urban–rural (rural)										0.03
	country (Scotland)										0.03
	country (Wales)										0.03
	country (Northern Ireland)										0.10**
R^2		0.006	0.019	0.053	0.059	0.063	0.065	0.084	0.088	0.133	0.255
R^2 change		—	0.013	0.034	0.006	0.004	0.002	0.019	0.004	0.045	0.122

Note: NVQ = National Vocational Qualifications; SES = socioeconomic status.
[a]*Ethnicity (White).*
[b]*Income (lowest quintile).*
[c]*Parent education (NVQ1).*
[d]*Relative wealth (same).*
[e]*Number of siblings (0).*
**p < .01; *p < .05.

DISCUSSION

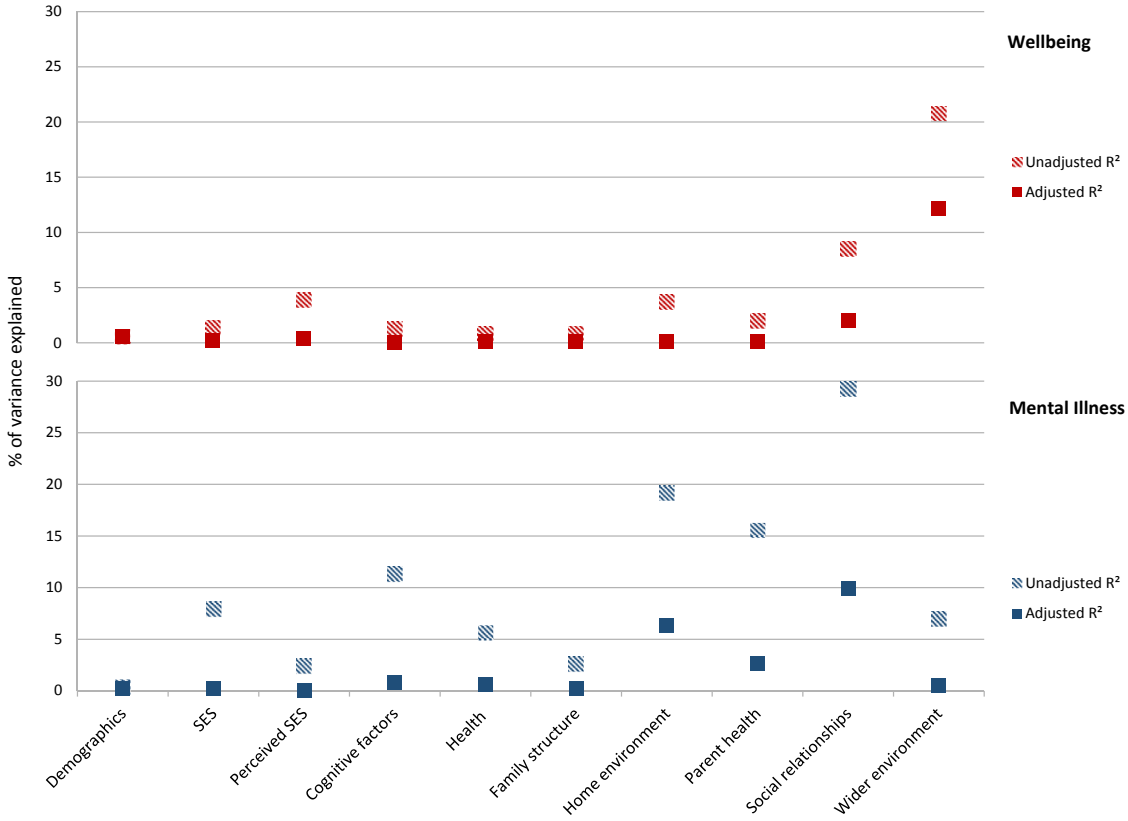
The present study provides an ecologic framework within which child mental ill-health and wellbeing were investigated in a current, representative cohort of UK children. For the specific predictors included in the study, the results provide replication, clarification, or new insight into the correlates of mental illness and wellbeing. Importantly, the study allows comparisons of the childhood correlates of these two domains of mental health in a nationally representative UK population of 11-year-olds.

Overview of Study Findings

For child sociodemographic correlates of the outcomes, being a girl was associated with higher symptoms and lower wellbeing in the final models; however, in all earlier models (Models A–I, Table 3), no sex differences in wellbeing were observed, which is consistent with findings from the recent Children's Worlds study of wellbeing[35] and is in contrast to adult findings where women on average have greater wellbeing.[36] For symptoms, sex differences in children were not consistently identified, with many population-based studies of children indicating higher symptoms and incidence of mental disorder in boys,[19,37,38] some in girls,[39] and others not finding any sex differences.[40] Ethnicity was not significantly associated with wellbeing, but being Asian, Black, or a member of another ethnic group predicted significantly less symptoms compared with being White, a finding that is consistent with other research in the UK.[18,41] Income predicted an expected gradient for symptoms, with higher income predicting lower symptoms.[13,18] However, the opposite gradient was found for wellbeing, whereby belonging to higher-income groups was associated with lower wellbeing, a finding that is in contrast with wellbeing findings at other stages of life.[42] In the initial model when income was first introduced (Model B), there was no effect of income on wellbeing; this emerged as other variables were introduced in the model, with children in the highest income quintile reporting significantly lower wellbeing than children in the lowest quintile from Model C onward. The Children's Worlds study of wellbeing did not include any measurement of parent or household income[20]; hence, this finding cannot be clarified with existing child wellbeing data. Perceived material position of the family and relative wealth was associated with wellbeing, with perceptions of being richer than peers decreasing wellbeing by one fifth of a standard deviation. Similar findings about perceived and experienced inequality have been observed in both children and adults, and possible mechanisms have been herewith outlined.[43]

Greater cognitive ability was associated with lower symptoms, but no association emerged with wellbeing. Learning and communication difficulties were associated with greater symptoms but were not associated with wellbeing. Chronic illness was associated with a one-fourth standard deviation increase in symptoms but was not associated with wellbeing. The symptom-related findings are expected from extant research,[18,44] but the lack of association between cognitive and health factors and wellbeing needs to be explored further and clarified in the literature. In contrast, being overweight or

FIGURE 1 Adjusted and unadjusted variance explained by different blocks of predictors included in the present study. Note: SES = socioeconomic status.



obese was associated with lower wellbeing but not with greater symptoms, helping to clarify previous mixed findings about the relation between weight status and mental health.[45]

In terms of family structure, in line with previous research findings,[18,35,46] living in a single-parent household was associated with an equivalent increase in symptoms and decrease in wellbeing. Having siblings was associated with greater symptoms in the final models after controlling for other variables and showed no associations with wellbeing. For mental illness, having siblings became relevant only after controlling for social relationships and a wider environment and the extent of the effect was similar whether the child had 1, 2, or 3 or more siblings (Table 2). Birth parity did not seem to be a significant predictor of either outcome. Arguing with parents was associated with lower wellbeing; however, it was associated with comparatively greater (10-fold) levels of symptoms. Being bullied by siblings had a similar magnitude of association with higher symptoms and lower wellbeing, a finding that supports recent results from other data sources about the negative ramifications of being bullied by siblings.[47] Poorer parent mental and general health predicted greater symptoms in children, a widely established finding,[48,49] and higher parent life satisfaction predicted higher child wellbeing; the smaller size of this latter relation is similar to that found in an existing study.[50]

Social relationship factors predicted approximately 10% of additional variance in mental illness and 4.5% of the variance in wellbeing (Tables 2 and 3). Parent-reported peer problems were strongly associated with symptoms compared with wellbeing (four times in magnitude), whereas child-reported peer difficulties, being bullied, and time spent with friends were associated only with children's wellbeing and not with their mental ill-health. The lack of an association in these results between child-reported peer difficulties and their parent-reported symptoms in this study is unexpected, because child-reported peer problems are generally associated with child-reported mental illness symptoms.[40] This raises the concern that some of the present findings might be reflecting reporting biases between informants. This issue is discussed in greater depth later in this section.

Wider environment factors were primarily associated with wellbeing, predicting 12% of additional variance (compared with 0.5% for mental ill-health). School connectedness and perceptions of neighborhood safety each predicted up to one third of a standard deviation in wellbeing. The findings regarding perceived neighborhood safely are similar to findings in adults[51] and reveal the significance of wider environmental factors on wellbeing from a considerably young age. Urban–rural neighborhood was not associated with either outcome. There have been inconsistent results regarding the effect of urban–rural location on children's mental health, with most UK studies indicating no differences.[18,52] No country-level differences were found for symptoms; however,

children in Northern Ireland reported higher wellbeing than children in Scotland, England, and Wales.

The predictors of the two domains of mental health, in terms of their salience and the amount of variance that they explain, indicate that, for wellbeing, the wider environment and social relationships are very important at this age. Of note, school connectedness, being bullied, friendships, and perceptions of safe neighborhood were strongly correlated with wellbeing. Conversely, these variables did not significantly predict mental ill-health, which was associated with arguing with parents, peer problems, chronic illness, communication difficulties, special educational needs, and parent mental health. Overall variance explained indicates that the ecosystems theory-based predictors included in these models predict almost half the variance in mental illness and just over a quarter of the variance in wellbeing. The present analyses also highlight the relevance of examining predictors as part of a framework and systematically considering the role of covariates in models. To illustrate this point, existing studies have investigated the associations between parental education and child's mental health[18] and find that higher parental education is associated with lower mental illness.[18] In the present study, once the model accounted for parental income and child's cognitive ability, parents' educational level ceased to be significantly associated with their child's mental health.

The key strengths of the present study are the inclusion of both mental illness and wellbeing, which are examined in the same sample, with the included predictors defined in the same way. Moreover, the sample is a current, nationally representative sample of thousands of children in the UK, allowing generalizability of findings to the population. The sample, by being part of a cohort study, also provides the opportunity to continue investigation of mental health as these individuals move into adolescence and adulthood. The key limitations of this study pertain to the measurement of the outcomes, where clinical diagnostic tools are not used in the case of mental illness, and the discrepancy in reporters, whereby children's mental ill-health is reported by parents and their wellbeing by the child themselves. Although it is widely accepted that subjective wellbeing is reported by the individual, for children's difficulties or symptoms, relying on parent reports is a widely established and proliferate practice in both research and clinical settings, with insufficient recognition of the bias this could introduce. The striking patterns of what variables predict parent-reported symptomatology and child-reported wellbeing highlight the importance of considering children's subjective views of their mental health. For instance, child reports of being bullied and troubles with friends predicted child-reported wellbeing but were not associated with their symptoms (parent-reported), which in contrast were strongly associated with parent reports of frequent arguments with the child. Similarly, parent's health and child's chronic illness, communication and learning difficulties, and cognitive ability were associated with parent-reported symptoms but not with subjectively assessed wellbeing. Although these findings might represent actual differences, the possible influence of parents' mental state, health, expectations, and relationship with the child on how they assess their child's mental health should not be discounted. In many studies of child mental health, the possibility that results obtained might be influenced by reporter biases is routinely overlooked.[48,53] Parent reports are widely used to report children's feelings and symptoms, with the common but poorly evidenced argument being that children cannot assess their own feelings and are not reliable reporters of their mental health. Recent health and wider policy agendas regarding the child's perspective in health outcomes,[54] in the wider context of the Children's Act and the United Nations Convention on the Rights of the Child, stress the importance of children's subjective reports of their health. Increasingly, research indicates that children, when asked appropriately, are able reporters of their mental health from as young as 5 and 7 years of age.[55-57] This becomes even more relevant as children move into adolescence and the salience of the family decreases relative to that of peers and wider social influences, a trend possibly reflected in the present child-reported wellbeing results. Future research investigating the discrepancies in predictors of parent-reported and child-reported mental illness and wellbeing would help clarify where results might be due to different reporters of children's mental health.

We herewith outline some of the key implications of our findings. Children's mental health predicts their life satisfaction, mental disorder, and a host of other economic, health, and social outcomes through the life course[7,16,58]; hence, policy makers and other agents interested in the wellbeing of the population would benefit from increasing the focus on early life characteristics, environment, and experiences in shaping mental illness and wellbeing. Understanding determinants and development of mental health through the life course is imperative to the provision of intervention and supporting individuals at all stages through their lives.[42]

Recent advances in support of understanding determinants in adolescence[59] can be furthered to support the focus on childhood. This is even more relevant in the age group investigated in the present study (11 years), because it presents data from one of the earliest ages at which children provide subjective accounts of their mental states using similar measurements as those used by adults. Hence, this provides a good baseline from which one can understand the development of subjective mental health and its determinants as individuals move into adolescence and beyond. The focus on children is also relevant because, as highlighted earlier, mental health in this life-stage is an important precursor to a swathe of lifetime outcomes.[7,16] Nevertheless, the bulk of studies focusing on wellbeing pertain to adults.[2,11,60] The present study highlights the importance of examining the determinants of mental health earlier in the life course, because they are sometimes different from the predictors of mental health in adulthood, reflecting both the differences in responsibilities and status of individuals and the salience of different predictors at different periods of the life course, thus providing important clues to where intervention might be most effective.

For the contribution of the present analysis to the theoretical understanding of these two domains of mental health,

there has been considerable discussion regarding whether wellbeing and psychopathology are two distinct domains or alternatively represent different ends of a single mental health spectrum. In addition, there has been an implicit assumption that the factors associated with better wellbeing are the reverse of those associated with mental illness. However, recent evidence in adults,[61] and now in children, increasingly indicates that the determinants of wellbeing are in many instances different from the determinants of mental illness. First, the weak correlation between these domains (0.2 in this study) indicates limited overlap and direct association. Although the small correlation might reflect the reporter differences discussed in the limitations earlier, we do not believe this is likely to be the only explanation because a recent large school-based study in England reported a similarly low correlation between child self-reports of mental ill-health symptoms and quality of life.[62] Second, examining whether the predictors are related linearly to these constructs lends insight into how these domains can be conceptualized. The results in this study in some cases suggest that some factors are associated with both outcomes in a coherent way that suggests a single dimension (e.g., single-parent family, school connectedness). However, in many cases, factors associated with increased psychopathology are not necessarily associated with decreased wellbeing or vice versa (e.g., cognitive ability, health factors, parent health), suggesting that even if these domains of mental health do lie on a single spectrum, they are not influenced by the same factors at different ends of the spectrum.

The well-established and widely observed social gradient in health[63] is observed for mental illness but not for wellbeing at this age. Indeed, the reverse social gradient for wellbeing observed in the final models when controlling for other predictors is a striking and counterintuitive finding, with possible implications for understanding social gradients through the life course. Moreover, both absolute and relative socioeconomic status demonstrated unexpected associations with lower wellbeing. It can be envisaged that differences in access to resources, social support, and individual's choices[64] might start to manifest through adolescence and into early adulthood in the case of wellbeing, contrary to other child outcomes (e.g., cognition and physical health), where the socioeconomic gradient is already observed in childhood.[13] The finding suggests that socioeconomic deprivation has not yet affected children's subjective evaluation of their wellbeing and supports the emphasis that has been given to investing in child development and education[65] as intervention at this stage to minimize inequality might mitigate the large socioeconomic gradient observed later in the life course. In addition, there is some evidence that the social gradient for mental illness is observed in parent-reported but not in child self-reported symptom data.[53] Although this might help explain the lack of a social gradient in children's wellbeing, it does not explain the observed reverse social gradient—a finding that needs unpacking in future research.

In conclusion, the present study provides a comprehensive insight into the factors associated with mental ill-health and wellbeing in children. The findings show areas where more detailed future research on causes, development, and intervention might be fruitful, thus providing an essential foundation for developing and implementing interventions that focus not only on preventing or treating symptoms of mental illness but also on improving children's wellbeing. &

CG Clinician Guidance

- Children's self-reported wellbeing is weakly associated with parents' reports of their mental ill-health at 11 years of age. Hence, considering the child's subjective assessment of their mental health is important.
- Socioeconomic predictors such as household income are not associated with children's subjective wellbeing. However, perceived wealth relative to peers (i.e., richer or poorer) is associated with lower wellbeing.
- Children with chronic illness, special educational needs, and communication difficulties do not report lower wellbeing. Childhood cognitive ability also is not associated with wellbeing at this age.
- Overweight children do not have greater symptoms of mental illness as reported by parents compared with children who are not overweight. However, they report lower wellbeing.
- Better engagement with schools is associated with lower symptoms and higher wellbeing.
- It is important to measure children's assessment of their interactions with peers (e.g., bullying) because their own reports of these experiences are strongly associated with reporting poorer outcomes.

Accepted June 22, 2016.

Drs. Patalay and Fitzsimons are with Centre for Longitudinal Studies (CLS), University College London (UCL) Institute of Education, University College London, United Kingdom.

The authors thank the Economic and Social Research Council and the co-funding by a consortium of UK government departments for funding the MCS through the CLS at the UCL Institute of Education, London. The authors also thank a large number of stakeholders from academic, policy-maker, and funder communities and colleagues at CLS involved in data collection and management. The funders of the study had no role in study design, data collection, data analysis, data interpretation, or writing of this report.

Drs. Patalay and Fitzsimons served as the statistical experts for this research.

The corresponding author has full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

The authors are grateful for the cooperation of the MCS families who voluntarily participated in the study.

Disclosure: Drs. Patalay and Fitzsimons report no biomedical financial interests or potential conflicts of interest.

Correspondence to Praveetha Patalay, PhD, Centre for Longitudinal Studies, UCL Institute of Education, University College London, 20 Bedford Way, London, WCIH 0AL, UK; e-mail: praveetha.patalay.11@ucl.ac.uk

http://dx.doi.org/10.1016/j.jaac.2016.05.019

REFERENCES

1. World Health Organization. Constitution of the World Health Organization. http://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf?ua=1. Published 1948. Accessed June 22, 2016.
2. Huppert FA. The state of wellbeing science: concepts, measures, interventions, and policies. In: Huppert FA, Cooper CL, eds. Interventions and Policies to Enhance Wellbeing. Oxford: Wiley Blackwell; 2014:1-50.
3. Amato PR, Gilbreth JG. Nonresident fathers and children's well-being: a meta-analysis. J Marriage Fam. 1999;61:557-573.
4. Maynard M, Harding S. Ethnic differences in psychological well-being in adolescence in the context of time spent in family activities. Soc Psychiatry Psychiatr Epidemiol. 2010;45:115-123.
5. Gutman LM, Feinstein L. Children's Well-Being in Primary School: Pupil and School Effects. London: Centre for Research on the Wider Benefits of Learning, Institute of Education; 2008.
6. Murray CJL, Vos T, Lozano R, *et al*. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012;380:2197-2223.
7. Copeland WE, Wolke D, Shanahan L, Costello E. Adult functional outcomes of common childhood psychiatric problems: a prospective, longitudinal study. JAMA Psychiatry. 2015;72:892-899.
8. Roza S, Hofstra M, van der Ende J, Verhulst FC. Stable prediction of mood and anxiety disorders based on behavioral and emotional problems in childhood: a 14-year follow-up during childhood, adolescence, and young adulthood. Am J Psychiatry. 2003;160:2116-2121.
9. Kessler R, Berglund P, Demler O, Jin R, Merikangas K, Walters E. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. Arch Gen Psychiatry. 2005;62:593-602.
10. Seligman ME. Flourish: A Visionary New Understanding of Happiness and Well-Being. New York: Simon and Schuster; 2012.
11. Holder MD. Happiness in Children: Measurement, Correlates and Enhancement of Positive Subjective Well-Being. London: Springer; 2012.
12. Huppert FA, So TC. Flourishing across Europe: application of a new conceptual framework for defining well-being. Soc Indic Res. 2013;110:837-861.
13. Bradley RH, Corwyn RF. Socioeconomic status and child development. Annu Rev Psychol. 2002;53:371-399.
14. Conti G, Heckman J. Economics of child well-being. In: Ben-Arieh A, Casas F, Frønes I, Korbin JE, eds. Handbook of Child Well-Being. Dordrecht: Springer Netherlands; 2014:363-401.
15. Goodman A, Joshi H, Nasim B, Tyler C. Social and Emotional Skills in Childhood and Their Long-Term Effects on Adult Life. London: Institute of Education; 2015.
16. Layard R, Clark AE, Cornaglia F, Powdthavee N, Vernoit J. What predicts a successful life? A life-course model of well-being. Econ J. 2014;124:F720-F738.
17. Keyes CL. The mental health continuum: from languishing to flourishing in life. J Health Soc Behav. 2002;43:207-222.
18. Green H, McGinnity A, Meltzer H, Ford T, Goodman R. Mental Health of Children and Young People in Great Britain, 2004. Basingstoke, UK: Office of National Statistics; 2005.
19. Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A. Prevalence and development of psychiatric disorders in childhood and adolescence. Arch Gen Psychiatry. 2003;60:837-844.
20. Rees G, Main G. Children's Views on Their Lives and Well-Being in 15 Countries: An Initial Report on the Children's Worlds Survey, 2013-14. York, UK: Children's Worlds Project (ISCWeB); 2015.
21. Bronfenbrenner U. Ecological Systems Theory. London: Jessica Kingsley Publishers; 1992.
22. Commission on Social Determinants of Health. Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health: Final Report of the Commission on Social Determinants of Health. Geneva: World Health Organization; 2008.
23. Millennium Cohort Team. Millennium Cohort Study. A Guide to the Datasets. 8th ed. London: Centre for Longitudinal Studies; 2014.
24. Goodman R. The Strengths and Difficulties Questionnaire: a research note. J Child Psychol Psychiatry. 1997;38:581-586.
25. Taylor MF, Brice J, Buckand N, Prentice-Lane E. British Household Panel Survey User Manual Volume A: Introduction, Technical Report and Appendices. Colchester, UK: University of Essex; 2010.
26. McIntosh S, Steedman H. Qualifications in the United Kingdom 1985-1999. London: London School of Economics Research; 1999.
27. Schor J. Born to Buy: The Commercialized Child and the New Consumer Culture. New York: Simon and Schuster; 2004.
28. Elliott CD, Smith P, McCulloch K. British Ability Scales Second Edition (BAS II): Administration and Scoring Manual. London: Nelson; 1996.
29. Cole T, Lobstein T. Extended international (IOTF) body mass index cut-offs for thinness, overweight and obesity. Pediatr Obes. 2012;7:284-294.
30. Caldwell BM, Bradley RH. Home Observation for Measurement of the Environment. Little Rock: University of Arkansas; 1984.
31. Pianta RC. Child-Parent Relationship Scale. Charlottesville: University of Virginia; 1992.
32. Kessler RC, Barker PR, Colpe LJ, *et al*. Screening for serious mental illness in the general population. Arch Gen Psychiatry. 2003;60:184-189.
33. Tarek M. Millennium Cohort Study: Technical Report on Response in Sweep 5. London: Centre for Longitudinal Studies; 2014.
34. StataCorp. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP; 2015.
35. Rees G, Main G, Bradshaw J. Children's Worlds National Report England. York: University of York; 2015.
36. Graham C, Chattopadhyay S. Gender and well-being around the world. Int J Happiness Dev. 2013;1:212-232.
37. Ford T, Goodman R, Meltzer H. The British Child and Adolescent Mental Health Survey 1999: the prevalence of DSM-IV disorders. J Am Acad Child Adolesc Psychiatry. 2003;42:1203-1211.
38. Ravens-Sieberer U, Wille N, Erhart M, *et al*. Prevalence of mental health problems among children and adolescents in Germany: results of the BELLA study within the National Health Interview and Examination Survey. Eur Child Adolesc Psychiatry. 2008;17(suppl 1):22-33.
39. Fink E, Patalay P, Sharpe H, Holley S, Deighton J, Wolpert M. Mental health difficulties in early adolescence: a comparison of two cross-sectional studies in England from 2009 to 2014. J Adolesc Health. 2015;56:502-507.
40. Patalay P, Fonagy P, Deighton J, Belsky J, Vostanis P, Wolpert M. A general psychopathology factor in early adolescence. Br J Psychiatry. 2015;207:15-22.
41. Fagg J, Curtis S, Stansfeld S, Congdon P. Psychological distress among adolescents, and its relationship to individual, family and area characteristics in East London. Soc Sci Med. 2006;63:636-648.
42. World Health Organization and Calouste Gulbenkian Foundation. Social Determinants of Mental Health. Geneva: World Health Organization; 2014.
43. Pickett KE, Wilkinson RG. Child wellbeing and income inequality in rich societies: ecological cross sectional study. BMJ. 2007;335:1080.
44. Cadman D, Boyle M, Szatmari P, Offord DR. Chronic illness, disability, and mental and social well-being: findings of the Ontario Child Health Study. Pediatrics. 1987;79:805-813.
45. Gatineau M, Dent M. Obesity and Mental Health. Oxford: National Obesity Observatory; 2011.
46. Dawson DA. Family structure and children's health and well-being: data from the 1988 National Health Interview Survey on Child Health. J Marriage Fam. 1991;53:573-584.
47. Bowes L, Wolke D, Joinson C, Lereya ST, Lewis G. Sibling bullying and risk of depression, anxiety, and self-harm: a prospective cohort study. Pediatrics. 2014;134:e1032-e1039.
48. Malmberg L-E, Flouri E. The comparison and interdependence of maternal and paternal influences on young children's behavior and resilience. J Clin Child Adolesc Psychol. 2011;40:434-444.
49. Ramchandani P, Psychogiou L. Paternal psychiatric disorders and children's psychosocial development. Lancet. 2009;374:646-653.
50. Casas F, Coenders G, González M, Malo S, Bertran I, Figuer C. Testing the relationship between parents' and their children's subjective well-being. J Happiness Stud. 2012;13:1031-1051.
51. Adams RE, Serpe RT. Social integration, fear of crime, and life satisfaction. Sociol Perspect. 2000;43:605-629.
52. Thompson M, Stevenson J, Sonuga-Barke E, *et al*. Mental health of preschool children and their mothers in a mixed urban/rural population. I. Prevalence and ecological factors. Br J Psychiatry. 1996;168:16-20.
53. Johnston DW, Propper C, Pudney SE, Shields MA. The income gradient in childhood mental health: all in the eye of the beholder? J R Stat Soc Ser A. 2014;177:807-827.
54. Kennedy I. Getting It Right for Children and Young People: Overcoming Cultural Barriers in the NHS so as to Meet Their Needs. London: Department of Health; 2010.
55. Sharp C, Goodyer IM, Croudace T. The Short Mood and Feelings Questionnaire (SMFQ): a unidimensional item response theory and categorical data factor analysis of self-report ratings from a community sample of 7-through 11-year-old children. J Abnorm Child Psychol. 2006;34:379-391.

56. Patalay P, Deighton J, Fonagy P, Vostanis P, Wolpert M. Clinical validity of the Me and My School questionnaire: a self-report mental health measure for children and adolescents. Child Adolesc Psychiatry Ment Health. 2014;8:17.
57. Arseneault L, Kim-Cohen J, Taylor A, Caspi A, Moffitt TE. Psychometric evaluation of 5-and 7-year-old children's self-reports of conduct problems. J Abnorm Child Psychol. 2005;33:537-550.
58. Hofstra MB, Verhulst FC. Continuity and change of psychopathology from childhood into adulthood: a 14-year follow-up study. J Am Acad Child Adolesc Psychiatry. 2000;39:850-858.
59. Viner RM, Ozer EM, Denny S, *et al*. Adolescence and the social determinants of health. Lancet. 2012;379:1641-1652.
60. Veenhoven R. Correlates of happiness. http://worlddatabaseofhappiness.eur.nl. Accessed July 2015.
61. Kinderman P, Tai S, Pontin E, Schwannauer M, Jarman I, Lisboa P. Causal and mediating factors for anxiety, depression and well-being. Br J Psychiatry. 2015;206:456-460.
62. Sharpe H, Patalay P, Fink E, Vostanis P, Deighton J, Wolpert M. Exploring the relationship between quality of life and mental health problems in children: implications for measurement and practice. Eur Child Adolesc Psychiatry. 2016;25:659-667.
63. Siegrist J, Marmot M. Social Inequalities in Health: New Evidence and Policy Implications. Oxford: Oxford University Press; 2006.
64. Li J, Mattes E, Stanley F, McMurray A, Hertzman C. Social determinants of child health and well-being. Health Sociol Rev. 2009;18:3-11.
65. Marmot M, Friel S, Bell R, Houweling TA, Taylor S. Commission on Social Determinants of Health. Closing the gap in a generation: health equity through action on the social determinants of health. Lancet. 2008;372:1661-1669.